

What is claimed is:

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1. A process for preparing 3-pentenenitrile by hydrocyanating 1,3-butadiene with hydrogen cyanide over at least one catalyst, which comprises contacting 1,3-butadiene with at least one microporous solid before the reaction, freeing the 1,3-butadiene of the at least one microporous solid before the hydrocyanation with the at least one catalyst and regenerating the at least one microporous solid which has been freed of 1,3-butadiene and/or hydrogen cyanide by heating under reduced pressure in an atmosphere which is formed by gases selected from the group consisting of noble gases, air and nitrogen.
2. The process according to claim 1, wherein 1,3-butadiene and hydrogen cyanide are contacted together or separately with the at least one microporous solid.
- 15 3. The process according to either of claims 1 or 2, wherein 1,3-butadiene and/or hydrogen cyanide are contacted with the at least one microporous solid in tubes having beds, and the flow conditions of 1,3-butadiene and/or hydrogen cyanide are selected in such a way that plug flow characteristics are generated.
- 20 4. A process for preparing 3-pentenenitrile by hydrocyanating 1,3-butadiene with hydrogen cyanide over at least one catalyst, which comprises effecting the hydrocyanation in the presence of at least one microporous solid.
- 25 5. The process according to claim 4, wherein, after the hydrocyanation, the at least one microporous solid is regenerated by heating under reduced pressure in an atmosphere which is formed by gases starting from the group consisting of noble gases, air and nitrogen.
- 30 6. The process according to any of claims 1 to 5, wherein the 1,3-butadiene has a content of acetylene which is less than 1000 ppm.
7. The process according to any of claims 1 to 6, wherein the at least one microporous solid is selected from the group consisting of aluminas and molecular sieves and has a pore size of from 0.01 to 20 mm.
- 35 8. The process according to any of claims 1 to 7, wherein the microporous shaped body has a porosity which is between 0 and 80% based on the particle volume.

9. The process according to any of claims 1 to 8, wherein the microporous shaped body is used in extrudate form, in round form or in undefined form as a result of fracturing.